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TEXAS AGRICULTURAL EXPERIMENT STATION

A. B. CONNER, DIRECTOR
COLLEGE STATION, BRAZOS COUNTY, TEXAS

BULLETIN NO. 503 JANUARY, 1935

DIVISION OF AGRONOMY

Peanut Growing in the Gulf Coast Prairie of Texas

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In experiments with peanuts at the Angleton Station, Macspan and Spanish, both small-podded varieties, made the highest average yield of nuts, 1290 pounds and 1268 pounds, respectively, per acre, during the seven years 1927-1933. The Carolina Runner and Virginia Runner, both large-podded varieties, ranked next in yield, producing average yields of 1179 pounds and 914 pounds per acre, respectively, during the period. Tennessee Red and Valencia were the lowest-yielding varieties, and made average yields of only 526 pounds and 543 pounds per acre, respectively, for the seven years.

Carolina Runner made the largest yield of air-dry forage (vine and nuts), 3.19 tons per acre, for the seven years. Macspan, Virginia Runner, and Spanish made the next largest yields, each producing slightly more than two tons per acre.

When yields of both nuts and forage are considered Carolina Runner, Macspan, and Spanish are the most valuable varieties for the Gulf Coast Prairie of the State.

Comparatively close spacing of the plants, 6 to 12 inches apart in 3-foot rows, gave the largest yields of both nuts and forage in the spacing experiments with the Spanish variety.

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PEANUT GROWING IN THE GULF COAST PRAIRIE OF TEXAS

R. H. STANSEL

The peanut, *Arachis hypogaea*, is a leguminous plant that requires a long growing season with favorable distribution of rainfall for large yields. Consequently, it is grown in regions with long growing seasons, such as those in the cotton-growing states of the United States, in China, India, Dutch East Indies, and in other subtropical countries of the world. The peanut is generally regarded as a native of Brazil and was carried to Africa by slave ships. By the same means it was brought to Virginia in the colonial days and subsequently has reached its present distribution in the United States.

Over one million acres, on an average, are planted to peanuts annually in the United States to be harvested for nuts, according to statistics of the United States Department of Agriculure*. In addition, a large acreage is grown for hay or for grazing by hogs. During the 5-year period, 1927-1931, an average of over 900,000,000 pounds of peanuts was harvested annually. For the 5 years, 1925-1929, an average of 78,000,000 pounds of unshelled nuts was imported annually into this country and an average of over 4,500,000 pounds was exported. Further, over 4,427,000 pounds of peanut oil was imported each year during this same period. From 1925 to 1929 an average of 19,895,000 pounds of peanut oil entered the domestic trade channels each year.

The international trade in peanuts and peanut oil is of considerable magnitude. Southern Asia and the nearby islands are the principal peanut-exporting countries. France and Germany import large quantities of nuts and export large quantities of oil.

There are two major well-defined areas of peanut production in the United States: The Virginia-North Carolina region and the region embracing Southwestern Georgia and Southeastern Alabama. The peanuts in the Virginia-Carolina region are produced largely for roasting while those in the Georgia-Alabama region are grown chiefly for the production of oil, peanut butter, and stock feed. In addition to these main regions, peanuts are grown in scattered areas throughout the southern states from Texas and Oklahoma eastward.

In Texas about 100,000 acres of peanuts are grown and harvested annually for the nuts. There are two principal areas in the state in which peanuts are grown on a commercial scale, one in north-central Texas and the other northeastern part of the State.

The Virginia-Carolina region produces higher yields of nuts than the average for the United States as a whole, while the yields in the Georgia-Alabama region and in Texas are below the yields of the country as a whole. The average yield of peanuts at the Angleton Station is slightly

*Data taken from the 1934 Yearbook of Agriculture, United States Department of Agriculture.

higher than the yield in the Virginia-Carolina region and considerably higher than the yield in the other peanut-growing areas (Table 1).

Table 1. Peanuts, acreage in United States and Texas, and average yield per acre at the Angleton Station and in other peanut-growing regions of the United States, 1927-1933.

Years	Acres		Average yield, pounds per acre			
	United States	Texas	Virginia-North Carolina region	Georgia-Alabama region	Texas	At Angleton Station
1927	1,142,000	117,000	882	703	600	696
1928	1,211,000	126,000	989	550	650	1053
1929	1,325,000	163,000	1025	600	420	1596
1930	1,133,000	124,000	810	625	415	1842
1931	1,419,000	161,000	1115	630	530	1152
1932	1,607,000	180,000	1045	496	550	1449
1933	1,361,000	167,000	950	578	620	1089
Average	1,314,000	148,000	974	597	541	1268

SOIL AND CLIMATIC CONDITIONS IN THE GULF COAST PRAIRIE

Rainfall and Its Effect on Yield of Peanuts

The average yearly rainfall at Texas Substation No. 3, located at Angleton in the Gulf Coast Prairie, approximately 18 miles from the Gulf of Mexico, was 44.53 inches for the 19 years, 1915-1933 (Table 2). While the monthly and yearly rainfall is ample, the distribution often varies widely in individual months and years.

Peanuts require an ample and uniform supply of moisture for the production of large yields of nuts. Under favorable conditions the peanut plant usually "sets" and matures one crop of nuts. When, however, the growth of the plant is hindered by insufficient moisture the plant usually attempts to mature a few nuts. Later in the season if sufficient rainfall occurs, resulting in favorable conditions for growth, the plant resumes active growth and may bloom and "set" a larger crop of nuts. In a similar way the plant may set a third crop. Under these conditions, the maturity of the largest crop of nuts will determine the time of harvesting.

The peanut, like cotton, is able to take advantage of favorable growing conditions and produce satisfactory yields, even if these conditions occur late in the season. For example, in 1932 there was no effective rainfall in June and July but abundant rains came in August and September, which resulted in a good crop of peanuts. Further, in 1916 the distribution of rainfall during the growing season was unusually favorable, which resulted in the largest yield of peanuts obtained during the 19 years of the experiment.

Temperature

The temperature during the growing season is favorable to the growth of peanuts. The mean maximum temperature ranged from 78.4° F. in April to 92.2° F. in August (Table 2). The mean maximum temperature ranged from 57.8° F. in April to 71.9° F. in July.

The average length of the growing season at the Angletton Station is 275 days. The average date for the last killing frost in the spring

Table 2. Rainfall and temperature during the growing and harvesting season of peanuts at the Experiment Station, Angleton, Texas.

Year	April	May	June	July	August	September	October	Annual
				Precipitation, inches				
1915	2.25	2.66	.00	3.95	13.87	6.29	2.49	48.81
1916	1.64	6.59	5.37	5.66	5.43	3.55	1.08	35.30
1917	2.37	6.04	.44	3.12	1.66	1.15	.49	22.74
1918	5.65	1.68	1.41	2.48	3.51	2.87	5.67	37.53
1919	1.35	5.27	16.57	6.55	5.42	3.62	5.93	66.79
1920	.54	3.64	5.83	4.76	9.10	2.49	6.81	49.28
1921	3.88	1.25	8.12	3.94	1.60	3.66	1.05	38.23
1922	2.17	4.98	15.05	9.29	2.92	5.67	7.02	67.96
1923	5.39	1.49	5.59	8.75	2.85	6.88	3.55	62.72
1924	1.15	4.64	4.62	1.06	3.94	1.83	.02	38.74
1925	1.23	1.49	3.73	6.52	2.71	7.06	10.54	46.61
1926	2.57	3.83	2.31	5.32	2.47	1.59	3.98	38.43
1927	2.78	.14	4.42	2.72	.09	6.74	2.45	33.71
1928	1.38	2.75	4.75	.40	2.63	4.51	2.66	35.02
1929	2.94	8.35	2.21	4.45	3.17	1.82	5.41	51.05
1930	1.73	5.73	.45	2.95	2.56	3.61	9.79	48.16
1931	1.27	2.59	1.36	5.03	1.35	.96	3.99	40.81
1932	5.58	2.40	1.33	.79	12.55	5.66	2.71	46.62
1933	.40	2.96	.64	12.34	2.85	3.87	3.45	42.49
Av. 1915-1933	2.44	3.61	4.43	4.74	4.25	3.89	4.16	44.53
Av. 1927-1933	2.30	3.56	2.17	4.10	3.60	3.88	4.35	41.84
				Average temperature, degrees F., 1914-1933				
Maximum	95	95	100	105	103	100	95	105
Mean max.	78.4	83.8	89.5	91.7	92.2	88.7	82.5	79.4
Mean min.	57.8	64.7	69.9	71.9	71.5	68.3	59.1	58.3
Mean mean	68.1	74.2	79.7	81.8	81.9	78.5	70.8	68.9
No. days with rain	6.8	7.7	7.6	9.5	10.1	9.2	7.8	105.3
Humidity %	79.0	79.1	78.3	79.4	79.2	81.2	79.4	79.8

for the years 1914-1933 was February 28 and the first killing frost in the fall was December 1.

Soils Used in the Experiments

Peanuts usually are grown on light sandy soils, not because these soils necessarily produce the highest yields or best quality of nuts, but mainly because the peanuts are more easily harvested and the soil does not adhere to the pods, leaving them bright and clean. The experiments with peanuts were located on a light-colored phase of Lake Charles clay and clay loam soils. The Lake Charles soils are black to dark-gray in color and range from clay to fine sandy loam in texture although the clay is the most extensive type. These soils have dark-gray, heavy clay subsoils. They contain a larger proportion of clay than is desirable from the standpoint of ease in harvesting peanuts. The Lake Charles soils are rather productive when adequately drained.

METHODS AND SCOPE OF WORK

The experiments with peanuts at the Angleton Station were begun in 1915 and were continued through 1933, after which they were discontinued. The variety test was conducted during the entire period but yields were not obtained in 1923 and 1925 on account of continued rains at the harvesting season. A spacing test was carried from 1915 to 1922. The results of these experiments are presented in this Bulletin.

Size of Plats

The peanuts in these experiments were planted in three-foot rows. During the period of the experiment the size of plat ranged from 1/44 to 1/11 of an acre, but since 1927 the plats have been 1/22 of an acre in size, consisting of two rows 330 feet long.

Rotations

In these studies the peanuts followed corn in the four-year rotation of corn, cotton, corn, and peanuts. During the last six years, however, grain sorghum occasionally replaced the corn in the rotation. After harvesting, the stalks of cotton, corn, and the grain sorghum usually were plowed under in the fall or winter as conditions permitted. The entire peanut crop, including vines and nuts, was removed from the land in harvesting.

Planting

Generally the peanuts were planted flat on land that had been plowed the preceding fall or winter. In some years, however, low beds were formed on the plowed land with a cultivator and the peanuts planted on these beds. Prior to 1920 the seed was dropped by hand but since that time the seed has been planted with a duplex hopper attachment on a lister planter. In the spacing tests the peanuts were dropped by hand.

As a rule, the small-podded varieties were not shelled before planting but the pods were broken crosswise so that a single kernel was dropped in each hill. The large-podded varieties, however, were shelled because the kernels usually do not fill the pod and have a tendency to drop out if the pods are broken, so that an empty hull would not be planted instead of a kernel.

The date of planting ranged from March 15 to June 5, but usually the peanuts were planted the latter part of April or first part of May.

Occasionally it was necessary to replant the peanuts because of thin stands resulting from low germination of seed, from unfavorable weather conditions immediately after planting, or from damage caused by rodents. Further, the final stands obtained were poor in most years.

Cultivating

The peanuts were given about the same cultivation as cotton. Shallow clean cultivation was practiced. From three to five cultivations were given

during the growing season. As a rule the peanuts were hoed twice and occasionally three times, which was one more hoeing than was given cotton.

Harvesting

The peanuts were dug with a walking mouldboard plow. As a rule the row was barred off and then the center strip containing the plants was turned over. The vines were then shaken out of the soil with a pitchfork and all of the plants on each plat, consisting of two or three rows, were heaped together for drying (Fig. 1). Two or three days' drying

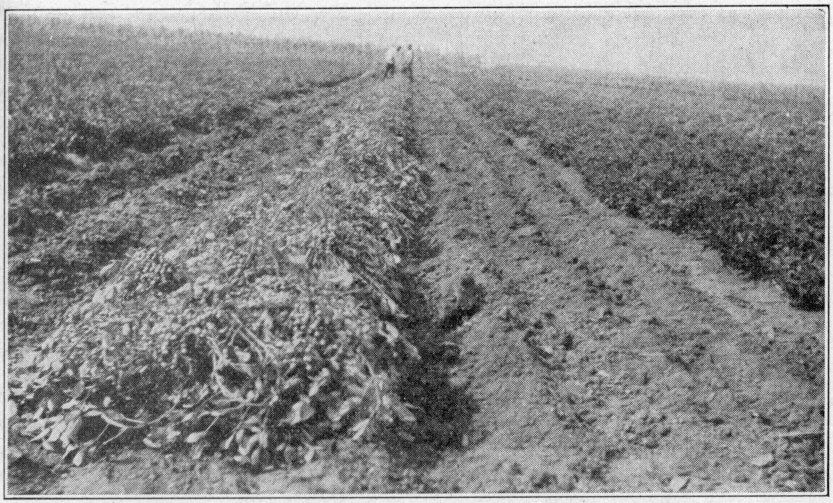

Fig. 1. Stacking peanuts by hand on Texas Substation No. 3, Angleton.

in the field was generally sufficient to cure the vines and nuts for stacking in the hay mow. When the vines did not dry out rapidly enough, they were turned once.

DESCRIPTION OF VARIETIES OF PEANUTS

The varieties of peanuts grown extensively in the United States may be classified into two main groups, the large-podded and the small-podded groups. Descriptions of the main varieties of these groups grown in the variety test at Angleton follow.

Small-Podded Varieties

The **Spanish** variety is the most commonly grown variety in this country for the manufacture of oil and peanut butter. The stems have an upright growth and are somewhat coarse. The pods are small, containing as a rule two kernels, and form a dense cluster at the base of the plant.

The covering of the kernels is of a light-brown color and the nuts fit tightly in the pod.

The **Macspan** variety is a selection from the Spanish variety made by G. T. McNess of the Texas Agricultural Experiment Station. It is similar in type and growth habit to the Spanish variety but is more erect in growth and makes a slightly higher yield at Angleton.

Large-Podded Varieties

The **Virginia Bunch** variety, also called **Virginia Jumbo,** is the main variety grown for commercial roasting. The nuts are large and usually contain two kernels to the pod. The vines are erect in growth and the pods are bunched around the base of the plant. The envelope covering the kernel is of a light-brown color and the nuts as a rule do not fit tightly in the pod. This variety does not have as good a flavor as the other varieties.

The **Valencia** variety has an erect vine growth, but is not a vigorous grower at the Angleton Station. The pods are not bunched around the base of the plant as closely as is the case with the Spanish variety, but are not so scattered as in the runner types. The envelope covering the kernel is deep red in color, which is considered objectionable for milling purposes. The pods contain, as a rule, two kernels but three are not uncommon. The kernels fit tightly in the shell and the flavor is excellent.

The **Tennessee Red** variety is very similar to the Valencia variety with the exception that the pods contain two to five kernels. It also has a red envelope covering the seed and has an upright growth, but it is not a vigorous grower at the station. The kernels fit tightly in the shell and the flavor is excellent.

The **Virginia Runner** variety has pods similar to those of the Virginia Bunch variety, but are somewhat smaller in size. The pods usually contain two kernels, which do not fit tightly in the pod. The kernels are covered with a light-brown envelope. The flavor is poor. This variety has a vigorous prostrate type of growth and the nuts are scattered along the vines.

The **Carolina Runner** variety produces a nut that is similar in type and envelope color to that of the Spanish variety, but slightly larger. The vines have a prostrate type of growth and the nuts are scattered along the vines. This variety makes a very vigorous growth, and produces high yields of both nuts and vines at the Angleton Station.

VARIETY TESTS

Yield of Nuts

The Macspan and Spanish varieties made the largest average yields of nuts, 1290 pounds (43.0 bushels) and 1268 pounds (42.3 bushels) per

acre, respectively, during the seven years 1927-1933 (Table 3). In the trade, 30 pounds of the small-podded varieties (Spanish and Macspan) constitute a bushel, while with the large-podded varieties 22 pounds are counted as a bushel; the weight of a bushel of peanuts is important

Table 3. Yield of peanuts in pounds per acre in the variety test at Angleton Station.

Year	Small-podded varieties*		Large-podded varieties**				
	Macspan	Spanish	Carolina Runner	Virginia Runner	Virginia Bunch	Valencia	Tennessee Red
1915		1434			931	1938	1426
1916		6048		4011		2926	2605
1917		1890		2363		1388	1701
1918		810		499		381	409
1919		87		128	95	68	
1920		1500			1302	484	717
1921		672		480	576	451	660
1922	2391	1878		873	2233	1549	671
1924	528	309		486	1434	1085	836
1926		210		1269	700	706	506
1927	420	696	1159	356	805	257	216
1928	1158	1053	673	1054	739	552	455
1929	1740	1596	1157	1489	1267	810	1078
1930	1386	1842	2328	1085	1428	713	614
1931	1434	1152	979	1060	867	636	552
1932	1470	1449	968	519	497	447	326
1933	1422	1089	988	836	295	389	440
Average 1927-33	1290	1268	1179	914	843	543	526
Average 1927-33 bu. per acre	43.0	42.3	53.6	41.6	38.3	24.7	23.9

*A bushel weighs 30 pounds.
**A bushel weighs 22 pounds.

only in cases where the crop is sold by the bushel rather than by the ton, since the bushel price probably is about the same whether the 30-pound or the 22-pound standard obtains. When considered on the bushel basis, the Carolina Runner variety made the largest average yield, 53.5 bushels per acre of 22 pounds to the bushel. It ranked third in yield on the pound basis, producing 1179 pounds of nuts per acre, or 111 pounds less than the Macspan. Virginia Runner, Virginia Bunch, Valencia, and Tennessee Red in the order named, ranked next in yield.

The yields of the varieties were calculated on a basis of the nuts that remained on the vines after digging and handling. In no cases were the scattered nuts gathered. This amounted to a considerable proportion in some years. Prior to 1927 the yields were obtained from single plats but since that time the yields are an average of the yield of three plats for each variety, except the Spanish, which was planted in four plats each year.

Since 1927 the stands for the most part have been comparable but were usually thinner than desired. The yields would probably have been greater if full stands had been obtained. The actual stands were generally one-half or less of that desired (Table 4).

The quality of nuts was, as a rule, very good. The nuts filled the pod in most cases and general observations indicate that they were larger than those of the same varieties found in the market. Virginia Bunch produced unusually large nuts, which almost filled the pods in the most favorable years.

Table 4. Average distance in inches between plants in the variety test of peanuts.

Year	Spanish	Virginia Bunch	Valencia	Virginia Runner	Tennessee Red	Macspan	Carolina Runner
1919	102	54	62	72			
1920	11	25	24		22		
1921	16	15	19	21	18		
1922	17	22	27	24	28	17	
1926	33	15	14	10	17		
1927	35	61	61	99	71	56	32
1928	28	62	39	38	49	27	43
1929	28	30	38	32	32	26	35
1930	23	44	32	43	29	20	25
1931	24	33	33	32	34	35	37
1932	32	69	46	62	54	23	52
1933	28	88	45	49	47	25	39

Yield of Forage

Carolina Runner made the highest average yield of air-dry forage (nuts and vines), 3.19 tons per acre. Macspan, Virginia Runner, and Spanish made about the same yield of forage, slightly more than two tons per acre. Tennessee Red and Valencia were the low-yielding varieties. The

Table 5. Yield of air-dry forage (vines and nuts) in tons per acre in variety test of peanuts.

Year	Spanish	Virginia Bunch	Valencia	Virginia Runner	Tennessee Red	Macspan	Carolina Runner
1915	2.24	3.58	3.88		4.19		
1916	6.64		4.81	4.49	4.46		
1917	2.08		3.11	3.18	3.12		
1918	1.10		1.03	.99	.90		
1919	.20	.51	.32	.54			
1920	2.16	2.21	1.77		1.94		
1921	2.04	2.94	2.85	3.38	2.84		
1922	3.04	2.97	2.09	2.93	1.45	2.95	
1924	.44	2.28	2.24	.90	1.69	.86	
1926	.25	1.07	2.12	2.22	.84		
1927	1.47	2.01	.71	1.27	.50	1.03	4.68
1928	1.91	1.15	1.61	2.32	1.28	2.27	1.97
1929	1.80	2.03	1.38	2.98	1.44	2.11	3.30
1930	3.07	2.06	2.04	2.35	1.96	3.04	3.96
1931	2.63	2.27	2.04	3.47	1.92	2.58	3.47
1932	2.44	1.04	1.55	1.51	1.27	3.09	2.67
1933	1.42	.48	1.06	1.54	.84	1.94	2.26
Average 1927-1933	2.11	1.58	1.48	2.21	1.32	2.29	3.19

yields of forage have been entirely satisfactory and the quality excellent. These yields indicate that more peanuts could be profitably grown in this region for forage than are grown at the present time. Even larger yields than those reported could be expected with better stands.

Percentage of Nuts in Forage (Vines and Nuts)

The percentage of air-dry nuts to air-dry forage (vines and nuts) of the varieties during each year of the test is given in Table 6. The percentage of nuts varied considerably for each variety from year to year. During the years of high yields, such as those in 1916 and 1917, the

Table 6. Percentage of nuts in forage (vines and nuts) of different varieties of peanuts.

Year	Spanish	Virginia Bunch	Valencia	Virginia Runner	Tennessee Red	Macspan	Carolina Runner
1915	32	13	25		17		
1916	46		30	45	29		
1917	45		22	37	27		
1918	37		18	25	23		
1919	21	9	11	12			
1920	35	29	14		18		
1921	14	10	8	7	12		
1922	31	38	37	15	23	41	
1924	35	32	24	27	25	31	
1926	41	33	17	25	30		
1927	24	20	18	14	22	21	12
1928	28	33	17	23	18	25	17
1929	44	31	29	25	38	41	18
1930	30	35	18	23	16	23	29
1931	22	19	16	15	14	28	14
1932	30	24	14	17	13	24	18
1933	38	31	18	27	26	37	22
Av. 1927-1933	31	28	19	21	21	28	19

percentage of nuts of the several varieties ranged from 22 to 46, while during years of low yields, as in 1921, the percentage of nuts was much lower and ranged from 7 to 14.

In the average from 1927 to 1933, the Virginia Runner, Carolina, Valencia, and Tennessee Red had low percentages of nuts. Spanish, Macspan, and Virginia Bunch had high percentages of nuts ranging from 28 to 31.

SPACING TESTS

The object of the spacing test was to find the spacing that would give the largest yields. The Spanish variety was used. The nuts were dropped by hand at specified distances in three-foot rows, as shown in Table 7. In most cases full stands were not obtained, on account of poor germination and injury from rodents. The final stands, however, were obtained by an actual count of the plants at harvest time.

In general, higher yields of both nuts and forage were obtained from the closer spacings, as shown in Tables 7 and 8. However, from the incomplete data secured, there appears to be little difference in yields of nuts or forage from 3-, 6-, and 9-inch spacings. Probably 6 to 12 inches in three-foot rows would be about the correct spacing for Spanish peanuts on these soils, when the cost of the seed is considered. The prostrate types of peanuts, on account of their nature of growth, would

probably require a wider spacing and possibly 12 to 15 inches would be correct for them.

COMPOSITION AND USES OF PEANUTS

Peanuts are nutritious and are used extensively as a human food as well as feed for livestock. Spanish peanuts contain 47 to 50 per cent of oil and 31 per cent of protein. The kernels of the Virginia type of peanuts contain 37 to 47 per cent of oil and 29 to 30 per cent of protein.

One ton of Spanish peanuts yields 70 to 80 gallons of oil and 1300 to 1400 pounds of cake, while one ton of shelled nuts yields 100 to 115

Table 7. Yield per acre in pounds of Spanish peanuts with different spacings of plants in three-foot rows.

Spacing of plants in row, inches	1915	1916	1917	1918	1920	1921	1922	Average 1916-1918
3			2181	807				
6		5244	2061	957				2754
9	2427	4605	2034	771				2470
12		4776	2007	696	1440			2493
15					939	672		
18	2235	4521	1815	783	945	564	1725	2373
21					1317	273	1554	
24		3477	1509	534	729			1840
27	1968				777	288	2088	
30						279	1710	
36	1083	2856				204	1194	
48							846	

gallons of oil and 1100 to 1200 pounds of cake containing 40 to 50 per cent of protein.

Peanuts are often not considered as a staple article of diet, but usually as a confection in the form of roasted peanuts or in peanut candy. Peanut

Table 8. Yield per acre in tons of air-dry forage (vines and nuts) of Spanish peanuts with different spacings in three-foot rows.

Spacing of plants, inches	1915	1916	1917	1918	1920	1921	1922	Average 1916-18
3			2.73	1.74				
6		5.75	2.64	1.82				3.40
9	3.80	5.05	2.83	1.46				3.11
12		5.24	2.73	1.28	2.77			3.08
15					2.11	2.38		
18	3.49	4.96	2.66	1.24	2.27	2.38	2.53	2.95
21					3.54	1.32	2.09	
24		3.81	2.44	.87	2.59			2.37
27	3.12				2.44	1.23	2.89	
30						1.20	2.49	
36	1.69	3.13				1.01	2.09	
48							1.50	

butter has a high nutrititive value and is largely used as a standard food. The best peanut butter is usually a blend of the Spanish and Virginia types of nuts. In the manufacture of peanut butter the shelled nuts are roasted; the thin skin covering the nut and most of the germ,

or embryo, are removed. The remainder of the nut is ground and a small amount of salt added.

As mentioned above, the peanut kernel contains 37 to 50 per cent of a highly digestible oil that compares favorably with olive oil for culinary purposes. Peanut oil is used in large quantities as a salad oil, as cooking oil, and in the manufacture of margarine. The inedible grades and the soap stock resulting from refining the oil are used in the manufacture of soap. Peanut oil cake, the residue after the oil has been pressed out, contains 40 to 50 per cent of protein. Experiments have shown that peanut proteins are not only highly digestible but that they rank among the highest in quality, containing all the known essential amino acids. Feeding tests have demonstrated the nutritive value of peanut proteins when used in a grain ration, and are nearly if not quite equal to the proteins of milk, meat, and eggs. Peanuts can be substituted for nuts where the latter are not easily obtained or are high in price. A highly digestible and palatable bread can be made from a mixture of wheat and peanut flour.

Peanut vines make a good quality of hay, containing 10 to 12 per cent of protein. The feeding value of peanut hay compares favorably with that af alfalfa and other leguminous hays. Peanut cake is a good source of protein for livestock rations. Hogs relish peanuts, which, however, should be fed only in moderate amounts to avoid soft pork. The nuts of the small-podded varieties make good poultry feed. It is said that turkeys fattened on peanuts yield a better-flavored and more tender meat than turkeys fattened on corn or other grain feeds.

Since the farm machinery used in the production of cotton is also suitable for the production of peanuts, most cotton growers in the Gulf Coast Prairie of Texas can produce peanuts without buying additional machinery, or equipment, of any kind. The fact that the peanut crop can be stored and the crushing process carried on in cottonseed oil mills with practically no change in equipment, offers an economic advantage in the cotton-growing states. Further, since the farm family diet is often lacking in nuts, peanuts may be used to supply the deficiency. Since peanuts may be produced easily and cheaply, the crop may be grown to advantage on most farms of the region.

SUMMARY

Experiments with varieties and spacing of peanuts were conducted at the Angleton Station from 1915 to 1933.

The Macspan and Spanish varieties made the highest average yield of nuts, 1290 pounds and 1268 pounds per acre, respectively, during the seven years 1927-1933. Carolina Runner and Virginia came next in average yield, producing 1179 and 914 pounds of nuts per acre, respectively, for the same period. Tennessee Red and Valencia, which have the best-flavored nuts, were the lowest-yielding varieties.

In production of forage, Carolina Runner ranked first, with an average yield of 3.19 tons of air-dry forage (vines and nuts) per acre for the

seven years 1927-1933. Macspan, Virginia, and Spanish each made average yields of slightly more than two tons per acre.

The results of these experiments indicate that Carolina Runner, Macspan, and Spanish are the better varieties for the Gulf Coast Prairie of Texas when the yields of both nuts and forage are taken into consideration.

In spacing experments with the Spanish variety, the best yields of both nuts and forage were obtained from close to medium spacing, 6 to 12 inches apart in three-foot rows.

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